Capstone

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Sungkyunkwan University, Capstone Design Project

Abstract

This document is a proposal for creating a program for people who have difficulty choosing dining menus, especially among modern individuals. In particular, college students face challenges in selecting menus for meals due to increased communication and options through various platforms. While it may not offer a perfect solution to this issue, we propose a web application called 'SchoolPicks' as a comprehensive platform for food selection. 'SchoolPicks' combines the strengths of existing communities and restaurant search portals, providing reliable information about restaurants near schools through a school verification process. Additionally, it offers features to assist in selecting restaurants for infrequent campus visits and recommends restaurants based on the purpose of the meal and dining companions. Lastly, for items that require orders for two or more people, this addresses the difficulty faced by college students who dine alone due to various reasons such as time constraints or late graduation. Through the community features of 'SchoolPicks,' it helps users find dining companions and provides opportunities to meet fellow students they may not have interacted with before, differentiating it from other restaurant application options.

1 Introduction

For busy modern individuals, there are daily moments of decision-making. One of these moments is deciding what to eat for lunch and dinner today. Especially for college students, due to flexible schedules and personal commitments, they often tend to frequent the same restaurants rather than exploring various dining options. Additionally, on special occasions such as graduation, when parents visit, or for dates and group gatherings, choosing a nearby restaurant can also be a challenging task. However, tucked away in the nooks and crannies around the school, there are many relatively unknown but excellent restaurants that have recently opened. These restaurants are not on the main thoroughfare of the school's dining area, making them less accessible to students.

2 Motivation/Objective

These restaurants are sometimes shared among college students through posts on communication platforms like Everytime, allowing them to exchange experiences. However, the information provided through these posts may become difficult to find as time passes since it's not a structured way of leaving student reviews for specific restaurants. On the other hand, platforms like Naver or BaeMin provide relatively easy access to review information about these restaurants and details such as menu and operating hours. However, the reliability of these reviews can be questionable, as some may be left for commercial purposes or by individuals who are not students, leading to a potential disconnect between the reviews and the preferences of college students.

Therefore, combining the strengths of both services - the college student community and easy access to restaurant reviews - "SchoolPicks" offers a unique solution. With its community feature, students can share information about restaurants, and the verification process through Sungkyunkwan University student emails ensures more trustworthy information. Additionally, while the search initially provides a random selection of six restaurants, "SchoolPicks" offers supplementary services that allow users to filter restaurants based on their specific preferences and budget. Furthermore, it assists students who have difficulty deciding their meals for the day by enabling them to filter restaurants available at that particular time using specific keywords, thus helping to alleviate menu-related concerns.

In addition to sharing restaurant information through community forums, "SchoolPicks" goes beyond that by providing a platform to find dining companions. This feature aids students who may be dining alone due to scheduling conflicts with friends or have been unable to visit restaurants they were interested in. It not only helps them enjoy meals together but also provides opportunities for alumni to connect and meet up.

3 Background / Related Work

Everytime

Everytime is an online service designed to share information related to universities and universities. It has begun to be spotlighted as an essential app for college students by providing functions such as their own communities in schools led by college students. As a function of the university's own community, functions such as lecture evaluation, timetable, school community posts, and notes can be used. Among the functions, it will help students share delicious restaurants around them, like the school community function, and create a web application to support the community so that they can eat food that cannot be eaten alone due to limited number of people.

NAVER

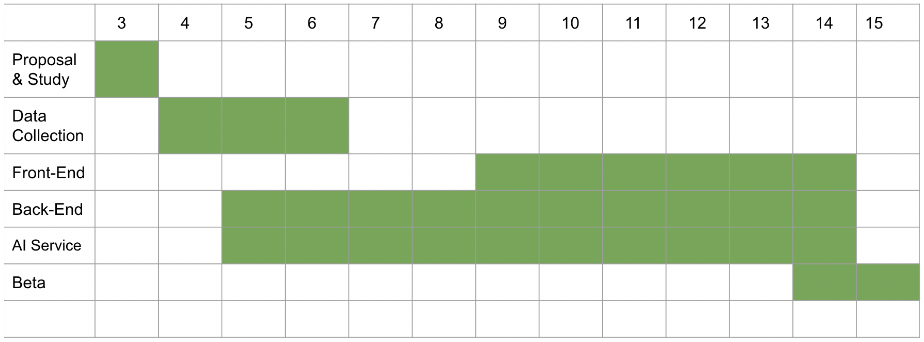
Naver is an online company that provides community services such as blogs and posts, focusing on search engine portal services. What interests us in this project is the ability to leave reviews of restaurants existing in search engines, how to link them to maps, and how to deliver information about restaurants.

Baedal Minjock

Baedal Minjok is the nation's No. 1 delivery application that allows you to see reviews of restaurants and connects to the delivery man who delivers to your home when you order from the restaurant. In addition, the store owner uploads the restaurant information and other customers leave reviews, but the store owner has the authority to control the information. The application will refer to the function that allows blind processing or changing data according to ID rights.

This is the

4 Planning in Detail



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Data Collection		🟩	🟩	🟩									
Front-End							🟩	🟩	🟩	🟩	🟩	🟩	
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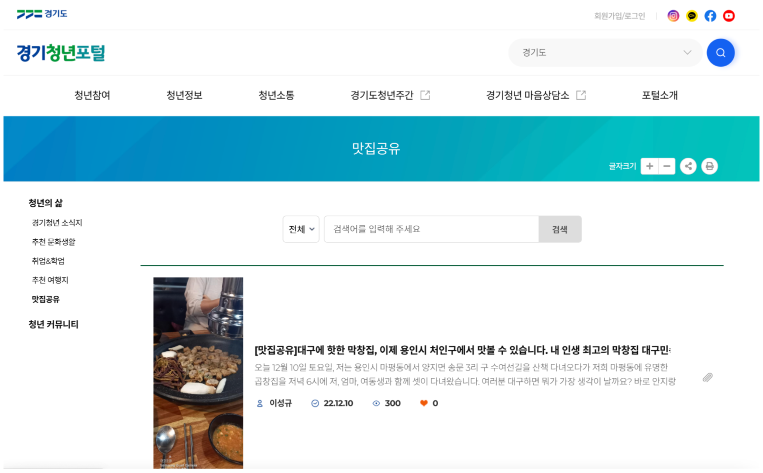
Figure 1: Schedule of Project.

5 Main Functions

5.1 Community (Restaurant Review Sharing Board)

For Readers: The community page is similar to a typical Everytime board where students share information with each other. On the board, you can see a reviewer's photo and a portion of the post content, similar to a typical Everytime board. Clicking on a post will allow you to view the full post content and keyword information. Additionally, there is a button that allows you to access more information about the restaurant, taking you to a page similar to the restaurant recommendations page.



[맛집공유]대구에 핫한 막창집, 이제 용인시 처인구에서 맛볼 수 있습니다. 내 인생 최고의 막창집 대구민

오늘 12월 10일 토요일, 저는 용인시 마평동에서 양지면 송문 3리 구 수여선길을 산책 다녀오다가 저희 마평동에 유명한 곱창집을 저녁 6시에 저, 엄마, 여동생과 함께 셋이 다녀왔습니다. 여러분 대구하면 뭐가 가장 생각이 날까요? 바로 안지랑

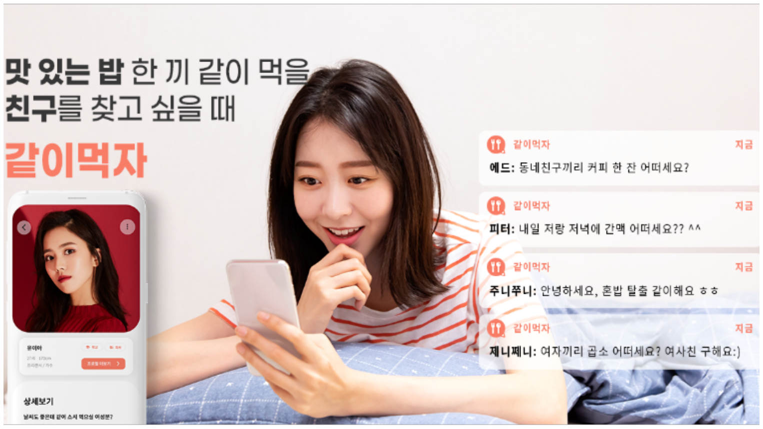
이성규 22.12.10 300 0

Figure 2: Schedule of Project.

For Post Authors: People who write posts are required to search for the restaurant they visited within the internal database. They must also provide essential information by selecting keywords related to the restaurant and specifying the price range. After creating the post, the author can edit or delete it when viewing the board.

Common Features for Readers and Authors: Users can leave comments on posts and give them a like. Each user can like a comment only once.

5.2 Community (Find Dining Companions Board)



맛 있는 밥 한 끼 같이 먹을
친구를 찾고 싶을 때
같이먹자
상세보기
날씨도 좋은데 같이 스시 먹으실 이성분?

같이먹자 지금
에드: 동네친구끼리 커피 한 잔 어떠세요?

같이먹자 지금
피터: 내일 저랑 저녁에 간맥 어떠세요?? ^^

같이먹자 지금
주니쭈니: 안녕하세요, 혼밥 탈출 같이해요 ㅎㅎ

같이먹자 지금
제니쩨니: 여자끼리 곱소 어떠세요? 여사친 구해요:)

Figure 3: Schedule of Project.

For Readers: Readers can view information about the author, including their reported history, age, gender, the content of the author's post, the estimated cost, and the preferred time. Additionally, they can easily access information about the restaurant's location and meeting place through the Google Maps API. Clicking on a button to view restaurant information will take them to a page similar to the restaurant recommendations page.

For Post Authors: Similar to the restaurant review sharing board, but authors must set a specific time, which must be within one hour. They are not allowed to upload photos to their posts. Authors must also consider that their age, gender, and cumulative reporting information will be visible.

Common Features for Readers and Authors: Users can leave comments on posts, like them, and use the messaging feature in the auxiliary functions to make specific arrangements that cannot be made through comments.

5.3 Optional Functions

5.3.1 Detection of Negative Language

You can add a feature that detects negative language through sentiment analysis. This can help identify and take appropriate actions against profanity or hate speech within the community.

5.3.2 Inappropriate Content Prevention Feature

For example, in the context of implementing a system where an account gets banned if a user accumulates three or more reports for suspicious advertising posts, another approach is to prevent users from posting any advertising content at all and only allow them to tag restaurants. Each approach has its pros and cons, so we will consider which method is better during the implementation and mid-term evaluation process.

5.3.3 Implementation of AI Services Using Pre-trained Models

You can utilize state-of-the-art natural language processing models to implement AI services. For instance, you can use the BERT model for profanity filtering or incorporate various NLP functionalities. Platforms like Huggingface can be used to deploy pre-trained models as APIs for integration into your service.

5.3.4 Reporting Functionality

You can add a feature that allows users to report inappropriate posts or behaviors within the community. If reports accumulate, other users can access information about the reported user, including the cumulative report count and reasons for the reports.

5.3.5 Message function

When looking for a meal mate in the community, if you make a specific appointment in the comments, the information may be exposed to an unspecified number of people. Therefore, we plan to enable detailed appointments and additional conversations through the message function. There will be no more unpleasant words or actions exchanged after the meeting. If there is no reason to meet, you can block contact with the other person by using the blocking function to delete all messages with the relevant person.

6 Technique

6.1 Front-end

React

React is an open-source JavaScript library developed by Meta. One of the biggest advantages of React.js is its ability to achieve fast performance in dynamic modern web applications by utilizing Dirty checking and Virtual DOM to identify and update only the DOM elements that need updating. Additionally, it promotes modular development by default, enhancing productivity. Since it's a library rather than a framework, React can be easily integrated with other frameworks, making it compatible with backend tools like Spring.

6.2 Back-end

Spring

Spring is a web framework based on Java/Kotlin that provides features like Spring Boot, making it easy to create framework projects. It also incorporates design patterns and architectures to address various issues commonly encountered in web server development. Key features include POJO, AOP, DI, IoC, and lifecycle management. These features contribute to the construction of robust servers for projects, seamless integration with databases, and maintenance advantages, making it a suitable choice.

JPA (Java Persistence API)

JPA (Java Persistence API) defines the way Java applications interact with relational databases. While JPA itself is an interface, Spring Data JPA, a module provided by Spring, simplifies JPA usage for developers. By providing interfaces like Repository, Spring generates implementation classes that execute appropriate queries based on the method signatures, making CRUD operations with the database easier. This technology was chosen for the project as it simplifies database operations without requiring developers to write complex queries.

MySQL

MySQL, an open-source RDBMS, was chosen for the project due to its support for CMS (Content Management System) functionalities often found in community features of blogs, forums, and related applications. It is also free to use, making it a suitable choice for the project unless there is a need for commercial modifications and redistribution.

Open API

Google APIs are used to retrieve information about restaurant locations and the current user's location. Additionally, OpenAI's ChatGPT3 is utilized for summarizing restaurant information and review services based on user input. Tagging and keyword extraction functionalities are planned to be implemented using pretrained models from HuggingFace, ChatGPT, and BERT, tailored to the project's needs.

Pre-trained Trained Model

The project intends to utilize pretrained models for tasks such as detecting inappropriate language and extracting keywords. Models trained with HuggingFace, ChatGPT, and BERT will be experimented with and selected based on their suitability for the project's requirements.